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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/994,809	11/28/2001	Hong Suk Yoo	049128-5039	9089

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WASHINGTON, DC 20004

EXAMINER
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SEFER, AHMED N

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 06/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/994,809

**Applicant(s)**

YOO ET AL.

**Examiner**

A. Sefer

**Art Unit**

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 April 2004.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.  
4a) Of the above claim(s) 12-21 is/are withdrawn from consideration.  
5) ☒ Claim(s) 22-32 is/are allowed.  
6) ☒ Claim(s) 1-11 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Response to Amendment*

1. The amendment filed on April 9, 2004 has been entered and new claims 22-32 have been added.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

3. Claims 1-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Akamatsu et al. (“Akamatsu”) USPN 6,414,730.

Akamatsu discloses (see figs. 1-6, col. 8, lines 60-67 and col. 9, lines 1-4) an array substrate for a liquid crystal display device, comprising: a substrate; a gate electrode 52 formed on the substrate; a gate insulating film 53 covering the gate electrode; an active layer 54 overlapping the gate electrode over the gate insulating film; an ohmic contact layer 55/56 on a part of the active layer, the ohmic contact layer defining a channel region in the active layer; a drain electrode 57/59 at an upper portion of the substrate, the drain electrode including, at least in part, two layers of conductive materials and having a first drain contact hole (unnumbered) penetrating the two layers; a protective layer 68 over the drain electrode, the protecting layer

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having a second drain contact hole 87 (col. 9, lines 19-23) communicating with the first drain contact hole; and a pixel electrode 69 over the protective layer, the pixel electrode contacting the drain electrode at inner surfaces of the first drain contact hole formed in the drain electrode through the second drain contact hole, wherein the gate insulating film is exposed through the first and second drain contact holes, and wherein the pixel electrode directly contacts the exposed gate insulating film through the first and second drain contact holes.

As for claim 2, Akamatsu discloses a width of the second drain contact hole 87 is larger than or substantially equal to that of the first drain contact hole.

As for claim 3, Akamatsu discloses (see col. 8, lines 55-57) a first metal layer 80 and a second metal layer 81 on the first metal layer, the first metal layer being titanium (Ti), and the second metal layer being aluminum (Al).

As for claim 4, Akamatsu discloses a gate line 60 connected to the gate electrode over the substrate for receiving a scanning signal; a data line 61 crossing the data line for receiving a data signal; and a source electrode 58 connected to the data line, the source electrode and said drain electrode being absent over the channel region and being in contact with the ohmic contact layer.

As for claim 5, Akamatsu discloses first metal layer 80 and a second metal layer 81 on the first metal layer, and wherein the first metal layer and the second metal layer have substantially the same pattern.

As for claim 6, Akamatsu discloses a data pad 73 at one end of the data line over the substrate, the data pad including, at least in part, said two layers of conductive materials, the data pad having a first data contact hole (unnumbered) penetrating the two layers; and a data pad terminal electrode 76 over the protective layer, wherein the protective layer is situated over the

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data pad, and has a second data contact hole 86 communicating with the first data contact hole, and wherein the data pad terminal electrode contacts the data pad at inner surfaces of the first data contact hole formed in the data pad through the second data contact hole.

As for claim 7, Akamatsu discloses a width of the second data contact hole 86 is larger than or substantially equal to that of the first data contact hole.

As for claim 8, Akamatsu discloses (see col. 8, lines 55-57) a first metal layer 80 and a second metal layer 81 on the first metal layer, the first metal layer being titanium (Ti), and the second metal layer being aluminum (Al).

As for claim 9, Akamatsu discloses the data pad over the gate insulating film 53.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akamatsu in view of Dojo et al. ("Dojo") USPN 6,528,357.

Akamatsu et al disclose the device structure as recited in the claim, but do not specifically a data pad including a semiconductor layer beneath a first metal layer.

Dojo discloses (see figs. 1 and 6 and col. 4, lines 8-10) two metal layers 110, a first metal layer and a second metal layer on the first metal layer, and a data pad 162 including a semiconductor layer 120 beneath the first metal layer.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate Dojo's teachings with Akamatsu's device since that would suppress fluctuations in signal line capacitance as taught by Dojo et al.

As for claim 11, Dojo discloses the first metal layer of the two layers of the data pad and the underlying semiconductor layer having substantially the same pattern.

*Allowable Subject Matter*

6. Claims 22-32 are allowed.

*Conclusion*

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (571) 272-1921.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ANS  
June 18, 2004



**NATHAN J. FLYNN**  
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